

COMPLETE LISTING OF PENDING CLAIMS

Claims 1-31 (Canceled).

32. (Withdrawn) A gas turbine component made by a process comprising the steps of:

- a) providing a gas turbine component defining a superalloy substrate;
- b) directing a water jet having a sufficient pressure against the surface of the superalloy substrate for a sufficient time period to modify the surface morphology of the substrate; and
- c) depositing a metallurgical coating layer onto the modified surface of the substrate by high velocity oxygen fuel spray.

33. (Withdrawn) A gas turbine component made by a process comprising the steps of:

- a) providing a gas turbine component defining a superalloy substrate;
- b) roughening the surface of the substrate through grit blasting;
- c) directing a water jet having a sufficient pressure against the roughened surface of the substrate for a sufficient time period to modify the surface morphology of the substrate; and
- d) depositing a metallurgical coating on the modified surface of the substrate by high velocity oxygen fuel spray.

Claims 34-46 (Canceled).

47. (New) A method for applying a metallurgical coating to a superalloy substrate having an underlying grain structure, the method comprising the steps of:

a) roughening the surface of the superalloy substrate through grit blasting to provide an increased surface area for adhesion and mechanical bond formation between the superalloy substrate and a metallurgical coating;

b) directing a water jet having a pressure of about between 45,000 to 65,000 psi against the roughened surface of the substrate while traversing the surface at a sweep rate of about between 25 to 100 inches per minute and at a stand-off distance of about between .375 to 1.00 inches, to modify the surface morphology of the substrate;

c) depositing a first metallurgical coating onto the modified surface of the substrate by high velocity oxygen fuel spray, wherein the modified surface of the substrate has a microscopic roughness characteristic that promotes the formation of a mechanical bond between the substrate and the first metallurgical coating;

d) vacuum heat treating the coated substrate at a temperature of between about 1975°F and 2200°F for about 2 to 4 hours in a protective atmosphere to produce a diffusion zone between the first coating and the superalloy substrate that is about 0.0001 to 0.001 inches thick;

e) subjecting the coated substrate to hot isostatic pressing using an inert gas to densify and reduce porosity of the metallurgical coating; and

f) depositing at least a second metallurgical coating layer onto the coated substrate.

48. (New) A method according to Claim 47, wherein the step of depositing a first metallurgical coating onto the modified surface of the substrate includes depositing a platinum aluminide metallurgical coating onto the modified surface of the substrate.

49. (New) A method according to Claim 47, wherein the step of depositing a first metallurgical coating onto the modified surface of the substrate includes depositing a MCrALY metallurgical coating onto the modified surface of the substrate, wherein M is selected from the group consisting of Co, Ni and NiCo.

50. (New) A method according to Claim 47, wherein the step of depositing at least a second metallurgical coating layer onto the coated substrate includes depositing a ceramic coating layer onto the coated substrate.

51. (New) A method according to Claim 47, wherein the step of depositing at least a second metallurgical coating layer onto the coated substrate includes depositing a 6-8 weight % Yttria stabilized zirconium oxide ceramic thermal barrier onto the coated substrate.